



## Non-ophthalmic parameters and the presence of clinically significant macular oedema

Knudsen, L.L.; Lervang, H.H.; Lundbye-Christensen, Søren; Gorst-Rasmussen, Anders

*Publication date:*  
2006

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

### *Citation for published version (APA):*

Knudsen, L. L., Lervang, H. H., Lundbye-Christensen, S., & Gorst-Rasmussen, A. (2006). *Non-ophthalmic parameters and the presence of clinically significant macular oedema*. Poster presented at Meeting of the European Association for the Study of Diabetes Eye Complications Study Group (EASDEC), Århus, Denmark.

### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

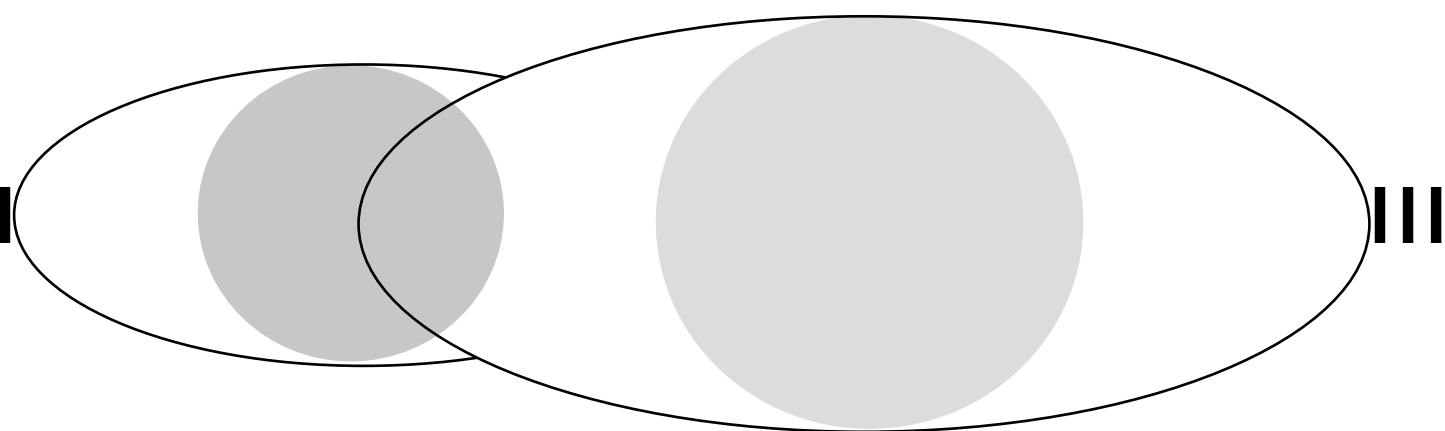
### **Take down policy**

If you believe that this document breaches copyright please contact us at [vbn@aub.aau.dk](mailto:vbn@aub.aau.dk) providing details, and we will remove access to the work immediately and investigate your claim.

# The North Jutland County Diabetic Retinopathy Study (NCDRS)

## Non-ophthalmic parameters and the association to clinically significant macular oedema

LL Knudsen <sup>1A</sup>, HH Lervang <sup>1B</sup>, S Lundbye-Christensen <sup>2</sup> and A Gorst-Rasmussen <sup>2</sup>  
<sup>A</sup> Ophthalmology, <sup>B</sup> Medical endocrinology, Aalborg Sygehus Syd, <sup>2</sup> Århus University Hospital, Aalborg, Denmark; <sup>2</sup> Department of Mathematical Sciences, Aalborg University, Aalborg, Denmark



### Purpose

To explore the influence from non-ophthalmic parameters on the prevalence of clinically significant macular oedema (CSME) in the present diabetic population.

### Methods

This cross-sectional study comprised 656 type 1 and 328 type 2 diabetic subjects undergoing diabetic retinopathy screening in the County of North Jutland, Denmark during the period 1<sup>st</sup> April 2000 to 30<sup>th</sup> April 2004. The association between CSME and blood-pressure, HbA1c, age onset of diabetes and duration of diabetes was explored using logistic regression analysis. The association to blood-pressure reducing medication, lipid lowering medication, neuropathy and nephropathy was also explored. Type 1 diabetic subjects were recruited from larger Aalborg, an urban area in the county of North Jutland, and comprised more than 75% of all known type 1 diabeticsubjects. Type2diabeticsubjectswere recruited from the entire county of North Jutland and comprised less than 5% of all known type 2 diabetic subjects.

### Results

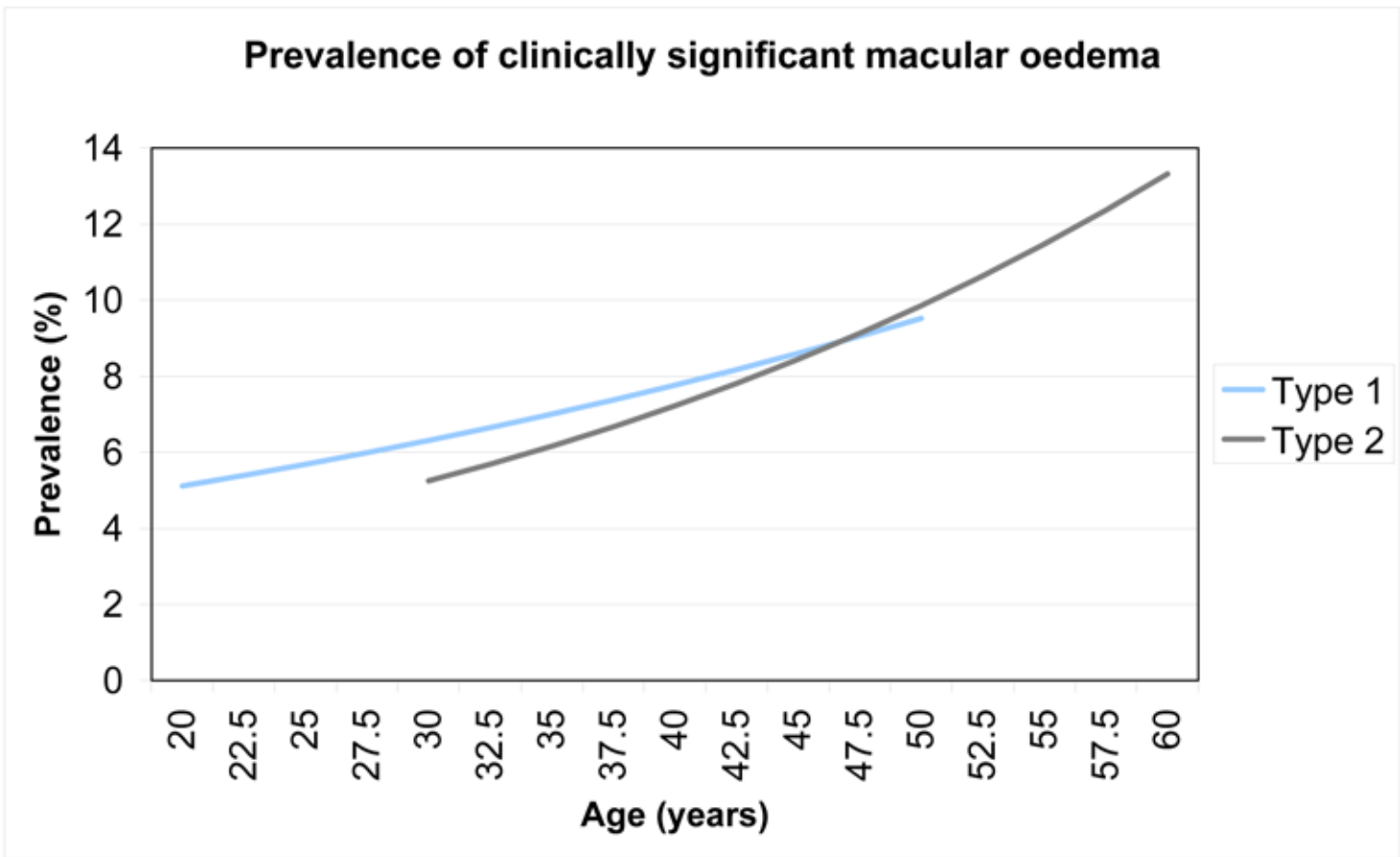


Fig 1  
Illustrates the association between prevalence of CSME and age of diabetic subjects, not controlling for other variables.

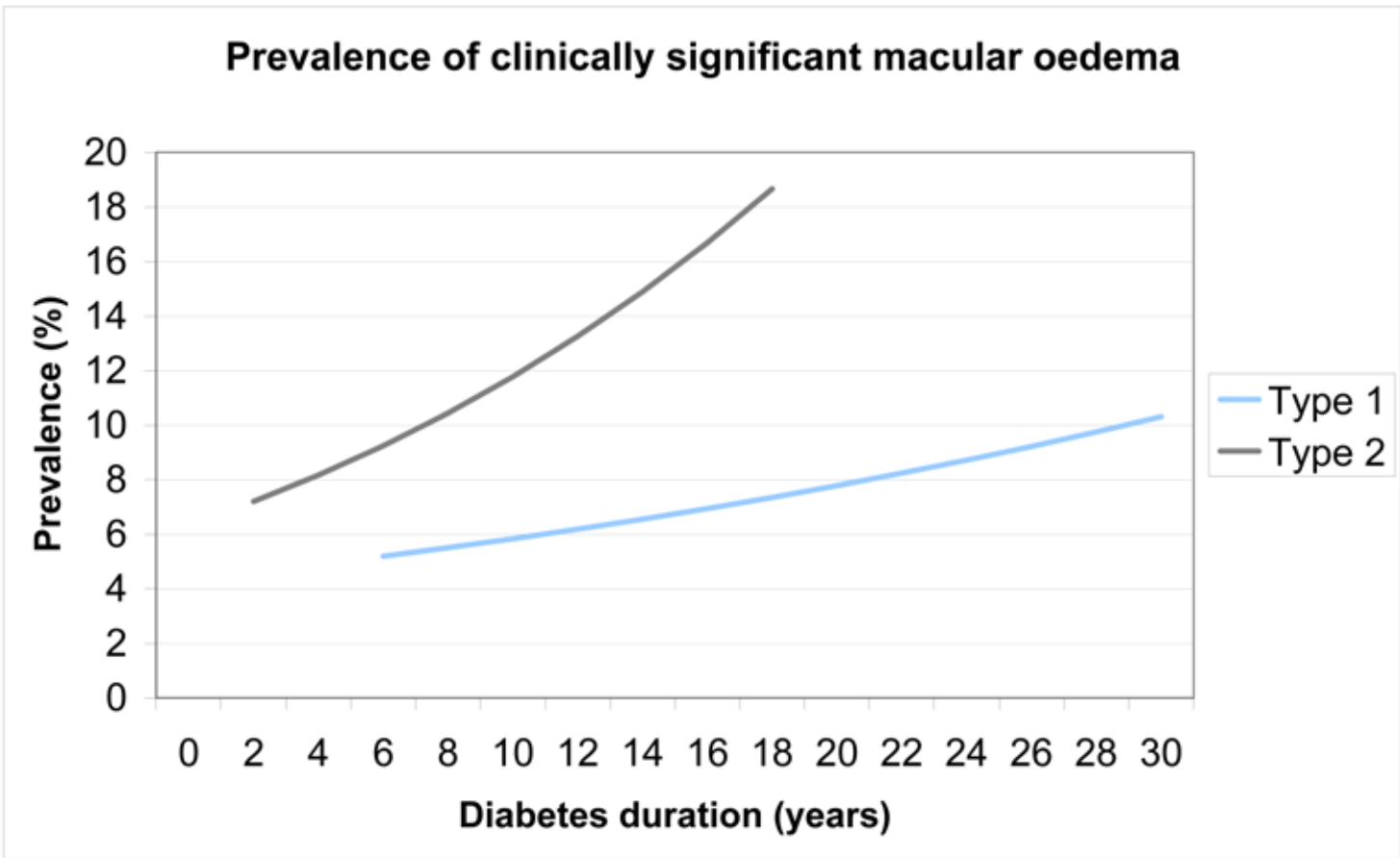


Fig 2  
Illustrates the association between prevalence of CSME and duration of diabetes, not controlling for other variables.

Table 1  
Odds ratios for CSME.

Odds ratios for clinically significant macular oedema			
Type 1			
	Crude OR	Corrected OR†	Corrected OR‡
Age	1.02 * ( 1.00 ; 1.05 )	1.01 ( 0.98 ; 1.04 )	1.01 ( 0.98 ; 1.04 )
Duration of diabetes	1.03 ** ( 1.01 ; 1.06 )	1.03 ( 1.00 ; 1.06 )	1.03 ( 1.00 ; 1.06 )
Bloodpressure			
Diastolic	1.03 ( 1.00 ; 1.06 )	1.03 ( 1.00 ; 1.06 )	1.03 ( 1.00 ; 1.07 )
Systolic	1.01 ( 1.00 ; 1.03 )	1.00 ( 0.99 ; 1.02 )	0.99 ( 0.97 ; 1.02 )
Mid	1.02 ( 1.00 ; 1.05 )	1.02 ( 0.99 ; 1.05 )	1.02 ( 0.99 ; 1.05 )
BMI	0.97 ( 0.89 ; 1.05 )	0.98 ( 0.90 ; 1.06 )	0.96 ( 0.88 ; 1.05 )
Hb1Ac	1.16 ( 0.93 ; 1.44 )	1.15 ( 0.91 ; 1.44 )	1.13 ( 0.89 ; 1.43 )
Type 2			
	Crude OR	Corrected OR†	Corrected OR‡
Age	1.04 * ( 1.00 ; 1.07 )	1.02 ( 0.99 ; 1.05 )	1.01 ( 0.97 ; 1.04 )
Duration of diabetes	1.07 ** ( 1.03 ; 1.11 )	1.06 ** ( 1.02 ; 1.10 )	1.05 * ( 1.00 ; 1.10 )
Bloodpressure			
Diastolic	1.01 ( 0.97 ; 1.04 )	1.01 ( 0.97 ; 1.04 )	0.98 ( 0.93 ; 1.02 )
Systolic	1.02 ** ( 1.01 ; 1.04 )	1.01 ( 1.00 ; 1.03 )	1.02 ( 1.00 ; 1.05 )
Mid	1.03 ( 1.00 ; 1.05 )	1.02 ( 0.99 ; 1.05 )	1.01 ( 0.98 ; 1.04 )
BMI	1.03 ( 0.98 ; 1.08 )	1.04 ( 0.99 ; 1.09 )	1.04 ( 0.98 ; 1.09 )
Hb1Ac	1.31 ** ( 1.07 ; 1.60 )	1.29 * ( 1.05 ; 1.60 )	1.26 * ( 1.01 ; 1.58 )

† Corrected for age and duration of diabetes.  
‡ Corrected for all other variables.  
\* Significant on a 0.05 level.  
\*\* Significant on a 0.01 level.

Table 2  
Distribution of non-ophthalmic parameters.

Distribution of non-ophthalmic parameters								
	Type 1				Type 2			
	Median	Interquartile range	Min	Max	Median	Interquartile range	Min	Max
Age at entry	37.3	19.0	17.0	79.0	58.1	15.0	18.0	83.0
Duration of diabetes	17.6	16.0	1.0	58.0	8.0	11.0	0.0	48.0
Bloodpressure								
Systolic	130.0	20.0	75.0	220.0	140.0	25.0	100.0	205.0
Diastolic	80.0	15.0	50.0	110.0	80.0	15.0	55.0	110.0
Mid	96.7	14.0	58.3	140.0	101.0	13.3	73.3	136.3
HbA1c	8.3	1.6	5.1	13.9	8.1	2.3	4.8	15.2
Body Mass Index	24.1	4.5	13.7	41.3	29.7	8.3	14.2	58.8

Table 3  
Odds ration for CSME.

Odds ratios for clinically significant macular oedema				
Type 1				
	Crude OR	Corrected OR†	Corrected OR‡	
Bloodpressure lowering medication	2.03 ** ( 1.13 ; 3.64 )	1.60 ( 0.85 ; 3.01 )	1.34 ( 0.70 ; 2.56 )	
Lipide lowering medication	0.26 ( 0.04 ; 1.90 )	0.15 ( 0.02 ; 1.14 )	0.18 ( 0.02 ; 1.40 )	
Neuropathy	0.82 ( 0.28 ; 2.35 )	0.42 ( 0.14 ; 1.34 )	0.39 ( 0.12 ; 1.24 )	
Nephropathy				
Mikro	2.24 * ( 1.02 ; 4.92 )	1.95 ( 0.61 ; 4.09 )	1.93 ( 0.83 ; 4.50 )	
Makro	1.89 ( 0.63 ; 5.69 )	1.48 ( 0.47 ; 4.66 )	1.26 ( 0.37 ; 4.28 )	
Type 2				
	Crude OR	Corrected OR†	Corrected OR‡	
Bloodpressure lowering medication	3.19 ** ( 1.47 ; 6.90 )	2.52 * ( 1.10 ; 5.77 )	2.36 ( 0.94 ; 5.92 )	
Lipide lowering medication	1.09 ( 0.53 ; 2.23 )	1.02 ( 0.48 ; 2.16 )	0.96 ( 0.43 ; 2.15 )	
Neuropathy	3.48 ** ( 1.72 ; 7.018 )	2.53 * ( 1.20 ; 5.323 )	2.26 * ( 1.01 ; 5.045 )	
Nephropathy				
Mikro	1.59 ( 0.61 ; 4.09 )	1.36 ( 0.52 ; 3.58 )	1.06 ( 0.37 ; 3.01 )	
Makro	7.50 ** ( 2.90 ; 19.38 )	6.58 ** ( 2.42 ; 17.89 )	5.18 ** ( 1.71 ; 15.68 )	

† Corrected for age and duration of diabetes.

‡ Corrected for age, duration of diabetes, bloodpressure, BMI and Hb1A<sub>1c</sub>.

\* Significant on a 0.05 level.

\*\* Significant on a 0.01 level.

† Corrected for age and duration of diabetes.  
‡ Corrected for age, duration of diabetes, bloodpressure, BMI and Hb1Ac.  
\* Significant on a 0.05 level.  
\*\* Significant on a 0.01 level.

### Conclusions

1. The prevalence of CSME was not influenced from any non-ophthalmic parameters among type 1 diabetic subjects.
2. Among type 2 diabetic subjects the prevalence of CSME was influenced from:
  - a. Duration of diabetes
  - b. HbA1c
  - c. Neuropathy
  - d. Nephropathy

